

REMARKS

Claims 6 and 19 have been amended, claims 18 canceled, and claims 23-34 added herein. Upon entry of this amendment, claims 6, 8-16, and 19-34 will be pending in the above-identified application.

Claims 6, 8-10, 12, and 13

Applicants respectfully request reconsideration of the rejection of claims 6, 8-10, 12, and 13 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,350,425 (Hoffman). As amended, each of claims 6, 8-10, 12, and 13 recites a substrate cleaning apparatus **for cleaning a substrate at a substantially constant rate** including a substrate cleaning bath to contain therein a substrate cleaning liquid, measuring means for measuring characteristics of the cleaning liquid in the substrate cleaning bath, the characteristics being relative to the hydrofluoric acid concentration of the cleaning liquid, a circulation system configured to circulate the cleaning liquid from the substrate cleaning bath, through the measuring means, and back to the substrate cleaning bath during cleaning of the substrate in the substrate cleaning bath, and **control means configured to process a signal from the measuring means during cleaning of the substrate in the substrate cleaning bath to control the feeding of the water from a water source to the substrate cleaning bath during cleaning of the substrate in the substrate cleaning bath so that the rate at which the substrate is cleaned remains substantially constant.**

Hoffman discloses a generation unit 300 for generating buffered hydrofluoric acid or ammonium fluoride. See column 9, lines 21-24 and Fig. 3. Hoffman fails to show a substrate cleaning apparatus for cleaning a substrate at a substantially constant rate including control means configured to process a signal from the measuring means during cleaning of the substrate in the substrate cleaning bath to control the feeding of the water from a water source to the substrate cleaning bath during cleaning of the substrate in the substrate cleaning bath so that the rate at which the substrate is cleaned remains substantially constant. The hydrofluoric acid produced according to Hoffman for deglazing a wafer is produced in the mixing tank 306 using a sensor 328.

See e.g., Fig. 3. The resulting solution is sent to the deglaze station 434 for deglazing the wafer. See e.g., Hoffman, column 13, lines 11-16. Hoffman also discloses that the wafer may be processed in the mixing tank. See column 11, lines 65-67. However, Hoffman does not disclose control means configured to process a signal from the sensor 328 *during cleaning of the wafer* in the mixing tank 306 (or in the deglaze station 434) to control the feeding of water, or any replenishing fluid, to the mixing tank *during cleaning of the wafer in the tank so that the rate at which the substrate is cleaned remains substantially constant*. To the contrary, Hoffman clearly discloses that the deglazing fluid produced in the mixing tank 306 is sent to the point of use – whether it be the deglaze station 434, the mixing tank, or an off-site location – for processing the substrate. See e.g., See column 11, lines 65-67 and column 13, lines 11-16 and 57-60.

Further, Hoffman describes monitoring chemical blending *during the steps of creating the deglazing fluid* using the sensor 328 to achieve a proper **end point** solution. See column 10, lines 18-24. Nowhere does Hoffman disclose altering that end point solution after it is created nor control means configured to control feeding of water, or any replenishing fluid, to the point of use *during processing* of the wafer to keep the rate of processing constant. The rate of deglazing a wafer according to Hoffman changes with time between a beginning of deglazing to an end of the deglazing because of the affect that processing the wafers has on the deglazing fluid. Compare present specification, page 7, line 8, to page 8, line 24. The control means of the present invention, however, is configured to control the addition of water to the cleaning bath during cleaning of the substrate to maintain a generally constant rate, as claimed. Maintaining a uniform and stable cleaning rate using water has many benefits including saving of resources and the environment. See e.g., specification, page 13, line 22, to page 14, line 25.

The Office Action apparently asserts that the production of deglazing fluid in the mixing tank 306 of Hoffman can be performed *during* cleaning of substrates, citing multiple sections and figures of the reference. Office Action, page 3, lines 5-9. However, these parts of Hoffman and the balance of the reference are silent regarding processing the fluid in the mixing tank 306 (or in the deglaze station 434) based on

signals from the sensor 328 *during deglazing of the wafer*. Accordingly, the reference fails to disclose control means configured to control feeding of water to the mixing tank during cleaning of the substrate to maintain a generally constant rate of cleaning, as claimed.

Claim 11

Applicants respectfully request reconsideration of the rejection of claim 11 under 35 U.S.C. § 103(a) as being unpatentable over Hoffman in view of U.S. Patent No. 6,156,944 (Pham) or U.S. Patent No. 5,895,639 (Swain). Because claim 11 depends from claim 6, claim 11 is allowable for at least the same reasons identified above with respect to claim 6. The secondary references do not disclose or suggest the previously noted elements. Accordingly, Applicants respectfully request the rejection of claim 11 be withdrawn.

Conclusion

As it is believed that the application is in condition for allowance, a favorable action and a Notice of Allowance are respectfully requested.

If the Examiner believes that there is any issue that could be resolved by an interview, the Examiner is respectfully requested to contact the undersigned attorney at the telephone number listed below.

Applicants believe no fee is due at this time. However, the Commissioner is hereby authorized to deduct any deficiency from or credit any overpayment to Deposit Account No. 19-3140.

Respectfully submitted,

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